



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 74201**

Desert Gas LP, LLC

I. INTRODUCTION

This new permit is issued to Desert Gas LP, LLC, the Permittee, for the operation of a natural gas liquefaction facility located in Ehrenberg, Arizona. Desert Gas LP terminated their air quality permit on April 26, 2018 with the intention of resuming operations in 2020. Supply and demand have shortened this timeline, therefore the facility applied for this permit in November 2018.

A. Company Information

1. Facility Name: Desert Gas LP
2. Facility Location: 50660 Colorado River Road
Ehrenberg, Arizona 85334
3. Mailing Address: P.O. Box 140
Ehrenberg, Arizona 85334

B. Attainment Classification

The facility is located in an attainment area for all criteria pollutants.

II. PROCESS DESCRIPTION

The facility receives natural gas from North Baja Pipeline LLC (NBP), removes any carbon dioxide and water vapor from the gas, then condenses the relatively pure methane into liquid natural gas (LNG). The LNG is transported from the facility by trucks. The facility comprises of two boilers rated at 4.5 and 4.2 MMBtu per hour, one heater rated at 0.2 MMBtu/hr, and three generators with at a total rating of 3194 HP. All the fuel burning equipment use natural gas as fuel.

III. LEARNING SITES EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals Near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

Upon review of ADEQ's database, it was determined that there is one learning site within 2 miles of the facility. As documented in Section XI, air dispersion modeling analysis has shown that the facility's operation will not adversely affect the learning site.

IV. EMISSIONS

Table 1: Potential Emissions

Pollutant	Emissions (tons per year)
PM	0.3
PM₁₀	0.3
PM_{2.5}	0.3
NO_x	73.7
CO	41.3
SO₂	0.1
VOC	12.8
HAPs	7.9

V. MINOR NEW SOURCE REVIEW

Minor NSR is not triggered due to the emissions of the facility not changing from the previous permit. However, the most recently added engine has not been modeled and the previous modeling (Permit No. 58893) showed the ambient impact reaching 99.6% of the National Ambient Air Quality Standards (NAAQS) for 1-hour NO₂. Therefore, ADEQ performed dispersion modeling for the new permit to demonstrate that the facility's NO_x emissions will not interfere with attainment and maintenance of NAAQS for 1-hour NO₂. For detailed ambient air impact analysis, see Section XI.

VI. APPLICABLE REGULATIONS

Table 2 displays the applicable requirements for each permitted piece of equipment along with an explanation of why the requirement is applicable.

Table 2: Verification of Applicable Regulations

Unit	Control Device	Rule	Discussion
Boiler and Heater	None	A.A.C. R18-2-724, 40 CFR Part 63, Subpart JJJJJ	Fossil-fuel equipment is subject to A.A.C. R18-2-724. 40 CFR Part 63, Subpart JJJJJ is not subject to gas fired boilers and is therefore not applicable.

Unit	Control Device	Rule	Discussion
Internal Combustion Engines (ICE) -1367 HP -814 HP -1113HP	None	A.A.C. R18-2-719, 40 CFR Part 63 Subpart ZZZZ	The ICE's are subject to A.A.C. R18-2-719, Standards of Performance for Existing Stationary Rotating Machinery and 40 CFR Part 63 Subpart ZZZZ. The facility is categorized as an 'existing' area source, or remote site if the facility meets the criteria for the classification. At the time of this application, the facility is subject to non-remote site requirements. The engines are not subject to 40 CFR Part 60 Subpart JJJJ because the engines were manufactured prior to 2008.
Fugitive dust sources	Water Trucks Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	This standard is applicable to any spray painting operation.
Demolition/renovation operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VII. PREVIOUS PERMIT CONDITIONS

Permit No. 58893 was issued on March 4, 2014 and terminated on April 26, 2018 with the intention of applying for a new permit and resuming operations in 2020. Table 3 below illustrates if a section in the previous permit was revised or deleted.

Table 3: Permit No. 58893

Section No.	Determination		Comments
	Revised	Delete	
Att. A.	X		General Provisions - Revised to represent most recent template language.
Section II	X		Facility wide requirements were updated to reflect visible emission requirements.

Section III	X		The Section for the internal combustion engines has been updated to include remote site requirements.
Section V	X		Fugitive dust section has been revised to reflect most recent template language.
Section VI		X	Mobile source requirements were removed from the permit.

VIII. MONITORING REQUIREMENTS

A. Boilers and Heater

The Permittee is required to report all 6-minute periods during which the visible emissions exceed 15 percent opacity.

B. Internal Combustion Engines

1. Remote Site Requirements

- a. The Permittee is required to keep records of the initial and annual remote site status.
- b. The Permittee is required to keep records of maintenance performed on the ICEs.

2. Non-remote Site Requirements

- a. The Permittee shall keep a copy of each report and notification submitted, including any Initial Notification or Notification of Compliance Status.
- b. The Permittee shall keep records of the occurrence, duration, and actions taken during each malfunction.
- c. The Permittee shall keep records of performance evaluations.
- d. The Permittee shall keep records of all required maintenance performed on the air pollution control and monitoring equipment.

C. Fugitive Dust

1. The Permittee is required to keep record of the dates and types of dust control measures employed.
2. The Permittee is required to show compliance with the opacity standards by having a Method 9 certified observer perform monthly surveys of visible emissions from fugitive dust sources. The observer is required to conduct a 6-minute Method 9 observation if the results of the initial survey appear on an instantaneous basis to exceed the applicable standard.
3. The Permittee is required to keep records of the name of the observer, the time, date, and location of the observation and the results of all surveys and observations.
4. The Permittee is required to keep records of any corrective action taken to lower the opacity of any emission point and any excess emission reports.

D. Periodic Activities

1. The Permittee is required to record the date, duration and pollution control measures of any abrasive blasting project.
2. The Permittee is required to record the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
3. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents.

IX. TESTING REQUIREMENTS

The Permittee shall conduct an initial and subsequent bi-annual performance tests for NO_x for each ICE.

X. COMPLIANCE HISTORY

The facility has been subject to eleven (11) inspections, no compliance issues have been reported.

XI. AMBIENT AIR IMPACT ANALYSIS

A. Model Selection

ADEQ used the most recent version (v18081) of American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) for the ambient impact analysis. AERMOD is the EPA-preferred model for estimating impacts at receptors located in simple terrain and complex terrain (within 50 km of a source) due to emissions from industrial sources. The AERMOD Modeling System consists of three major components: AERMAP, used to process terrain data and develop elevations for receptors; AERMET, used to process the meteorological data; and AERMOD, used to estimate the ambient pollutant concentrations.

B. Source Inputs

ADEQ modeled the maximum hourly emission rates of NO_x for all sources. ADEQ used the stack parameters based on design parameters and/or conservative estimated values.

C. Meteorological Data

ADEQ used AERMET meteorological preprocessor to process five-years (2011-2015) of surface meteorological data obtained from Blythe Airport, CA along with concurrent upper air radiosonde data obtained from the Las Vegas Airport, NV. ADEQ determined that the Blythe Airport data were representative of transport and dispersion conditions in the project area.

D. Background Concentration

ADEQ used the ambient NO₂ monitoring data collected from Buckeye AZ as background concentrations. ADEQ estimated the background concentrations based on 98 percentile of the Seasonal Hour-Of-Day, taking diurnal and seasonal patterns of ambient air quality monitoring data into account.

E. Building Downwash

ADEQ evaluated building downwash effects based on building and stack location and dimensions, and the EPA's Building Profile Input Program Plume Rise Model Enhancements (BPIPPRME).

F. Ambient Air Boundary and Receptor Network

ADEQ used the perimeter fenceline as the ambient air boundary for modeling purposes. ADEQ set up a receptor network to determine areas of maximum predicted concentrations. ADEQ used the AERMAP terrain processor to process the National Elevation Data (NED) data to generate the receptor elevations and hill heights.

G. One –Hour NO₂ Modeling Methodology

Per Appendix W Section 4.2.3.4-d, the EPA recommends three-tiered approach for 1-hour NO₂ modeling. Plume Volume Molar Ratio Method (PVMRM) and Ozone Limiting Method (OLM) are available as regulatory options in AERMOD as the preferred Tier 3 screening methods for NO₂ modeling. ADEQ selected PVMRM for 1-hour NO₂ modeling since the sources in the project site are elevated point sources. There are two key model inputs for PVMRM, namely in-stack ratios of NO₂/NO_x emissions and background ozone concentrations.

1. In-Stack Ratio

ADEQ used an in- stack ratio of 0.1 for stationary engines, which was consistent with previous modeling.

2. Ozone Data

ADEQ used five-years (2011-2015) of hourly ozone background concentrations obtained from the Blythe Airport, CA. For a single missing hour, ADEQ used linear interpolations to fill in the missing concentrations based on the previous and subsequent hour concentrations. For multiple missing hours, ADEQ calculated the maximum ozone concentration for each diurnal hour for each month and then used these hourly maximum concentrations to fill in their corresponding missing diurnal hours.

H. Modeled Results

Table 4 summaries the modeled results for 1-hour NO₂. As shown in Table 4, NO_x emissions from the project site will not cause or contribute to a violation of the NAAQS for 1-hour NO₂.

Table 4: AERMOD Results

NAAQS Pollutant	Averaging Time	Standard (µg/m³)	Maximum Ambient Concentration (modeled plus background) (µg/m³)	Percentage of Standard (%)	Pass/Fail
NO ₂	1-hour	188	165	87.8 %	Pass

XII. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AERMAP	Terrain data preprocessor for AERMOD
AERMET	Meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/EPA Regulatory Model
BPIP	Building Profile Input Program
CO	Carbon Monoxide
ft	Feet
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
ICE	Internal Combustion Engine
LNG	Liquid Natural Gas
NAAQS	National Ambient Air Quality Standard
NED	National Elevation Data
NO _x	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
OLM	Ozone Limiting Method
PM	Particulate Matter
PM ₁₀	Particulate Matter Nominally less than 10 Micrometers
PRIME	Plume Rise Model Enhancements
PTE	Potential-to-Emit
PVMRM	Plume Volume Molar Ratio Method
SO ₂	Sulfur Dioxide
TPY	Tons per Year
VOC	Volatile Organic Compound